APPLIED DECARBONISATION:

How Mansfield Pollard applied its own modular AHUs to deliver strategic decarbonisation

MANSFIELD POLLARD
AIR MANAGEMENT EXPERTS

decarbonisation:

reducing carbon from within

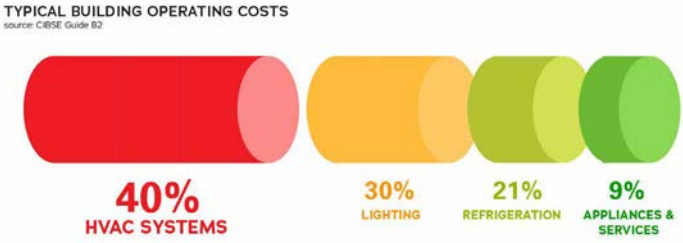
Two HP Series modular air handling units now deliver full mechanical ventilation, heating, and cooling to the 10,000ft² open-plan office at Mansfield Pollard's Bradford headquarters. Installed as a permanent upgrade to the site's building services, the project replaces a legacy gas-fired system and supports the wider electrification of MP's estate in line with the company's carbon reduction strategy.

STRATEGIC DEPLOYMENT WITHIN A VERIFIED CARBON PROGRAMME

This installation contributes directly to Mansfield Pollard's sustainability strategy and commitments. These include the phased removal of fossil fuel systems and measurable reductions in operational carbon intensity across all sites. The Bradford headquarters maintains a carbon-negative status, supported by verified emissions tracking and annual environmental reporting.

TARGETING A HIGH IMPACT BUILDING SERVICES ASSET

Air handling systems are among the most energy-intensive components of HVAC infrastructure. Replacing the gas-fired units with an electric system provides a clear emissions reduction pathway and supports the transition to low-carbon operation.



REPRESENTATIVE OF SECTOR-WIDE CHALLENGES AND CONSTRAINTS

These conditions are not unique. They reflect the constraints common to most retrofit projects: limited plant space, live occupancy, and the need for rapid deployment. Similar requirements arise across **retail, healthcare, education, and commercial estates**, where decarbonisation must be delivered within the limits of site access, installation windows, and legacy infrastructure.

At Bradford, the HP Series was selected to meet these demands without modification to standard specification. It was chosen for the same reasons it is being deployed across client estates: all-electric operation, integrated controls, and the ability to deliver practical, measurable decarbonisation without disruption.

This installation demonstrates how modular AHUs contribute to net zero strategies in real conditions. While not a complete solution, they are a decisive enabler when applied as part of a coordinated approach to electrification, controls optimisation, and demand reduction.

modular AHU selection:

product rationale and strategic fit

ALL ELECTRIC HVAC

DELIVERED THROUGH MODULAR DESIGN

The HVAC system selected for Mansfield Pollard's Bradford headquarters was required to meet three critical criteria: all-electric operation, integrated functionality, and spatial efficiency. The solution needed to serve a permanently occupied workspace from an external location, with no tolerance for disruption or reliance on remote plant.
The HP Series was selected for its ability to provide mechanical ventilation, heating, and cooling within a single modular unit. This was achieved using the standard product specification, with no additional plant, controls integration, or site-based configuration required.

MODULARITY THAT SUPPORTS
RAPID DEPLOYMENT & REPEATABILITY

The HP Series combines factory-integrated controls, embedded heat pump functionality, and compact plant geometry within a single pre-engineered format. This enables fast-track delivery, simplified siting, and installation within live operational environments.

The modular format also allows for future scaling or phased replacement, aligning with estate-wide decarbonisation strategies where continuity and site constraints must be considered alongside performance.

ONE PART OF A BROADER MODULAR AHU STRATEGY

While this project focused on the HP Series, the solution forms part of Mansfield Pollard's wider modular AHU platform, engineered to support low-carbon deployment across a range of building types, airflow requirements, and environmental conditions.

MPX modular air handling units

MPX ULTRA modular air handling units

Xe HEAT RECOVERY SERIES

HP HEAT PUMP SERIES

system specification
and unit deployment

CASING PARAMETERS
(BS-EN 1886:2025)

L1 Leakage Class	**D1** Casing Strength
T2 Thermal Transmittance	**TB3** Thermal Bridging

UNIT PERFORMANCE

2.15 m^3/s nominal airflow	**5** EC Fan Array
86% Heat Recovery From Thermal Wheel	**40** mm double skin insulated panels

ENGINEERED FOR PERFORMANCE

Each unit delivers a nominal airflow of 2.15m^3/s through a five-fan EC plug array, supporting stable ventilation performance, acoustic control, and controllability across variable operating conditions.

Heat recovery is achieved through a rotary thermal wheel with both sensible and latent energy transfer. System effectiveness exceeds 86% under EC 1253/2014 reference conditions, contributing to meaningful energy savings across seasonal transitions and year-round load profiles.

Heating and cooling are delivered by a fully integrated reverse-cycle heat pump, enclosed entirely within the AHU casing. This compact, all-electric format avoids the need for external plant or separate condenser units. A supplementary electric heater battery supports frost protection and maintains consistent performance during periods of low ambient temperature.

The casing complies with the relevant classifications under BS EN 1886:
L1 air leakage, T2 thermal transmittance
D1 mechanical strength and TB3 thermal bridging

Each unit is constructed using 40mm double-skin panels with integrated anti-corrosion protection, ensuring long-term durability in exposed outdoor environments.

QUICK & EASY INSTALLATION

Both units were installed at ground level on a pre-formed concrete base, spaced approximately three metres apart. Delivery was completed in sectional format, allowing each system to be manoeuvred into position using standard pallet handling equipment. No lifting equipment or cranes were required at any stage of the process.

External duct penetrations were formed directly through the building façade to connect with the internal distribution system. All control and power interfaces were factory-integrated, enabling simple connection on site to predefined terminal locations.

Commissioning was completed on the same day using the native HP Series web interface. Airflow rates, temperature set points, and operational schedules were configured through standard visualisation tools, with no requirement for third-party software or site-based programming.

performance management
and system optimisation

NATIVE CONTROL PLATFORM
SUPPLIED AS STANDARD

Both HP Series units installed at Mansfield Pollard's Bradford headquarters are monitored and managed using the MP controls platform. This browser-based system is embedded natively within each AHU and provides direct access to all operational parameters from day one.

The interface requires no third-party software, integration layers, or interface adaptation. All data, set points, schedules, and diagnostics are available through a secure web environment accessible via local or remote connection.

REAL-TIME MONITORING AND OPTIMISATION

The system enables continuous oversight of airflow, temperature, humidity, and air quality. Core performance variables are monitored in real time, with historical trend data available for all recorded parameters.
Energy consumption, fan speed, and electrical load are displayed live, supporting direct correlation between operating mode and energy profile. Seasonal comparison tools and integrated scheduling functions allow the system to adapt dynamically to changes in occupancy, ambient conditions, and building usage.

Three standard operating modes are provided: Eco, Optimum, and Comfort, each with configurable thresholds for temperature, airflow, and CO_2 levels. All adjustments are made within the same interface, with no commissioning software or engineer access required.

SCALABLE & SELF-CONTAINED
CONTROL ARCHITECTURE

The MP platform provides a unified control environment regardless of project size, site type, or sector.

This allows estates teams to apply the same optimisation principles and energy management tools across multiple locations without software licensing, bespoke programming, or external integration support.

Diagnostic features, fault alerts, and filter status indicators are available through the same interface and can be accessed remotely for ongoing support.

decarbonisation:

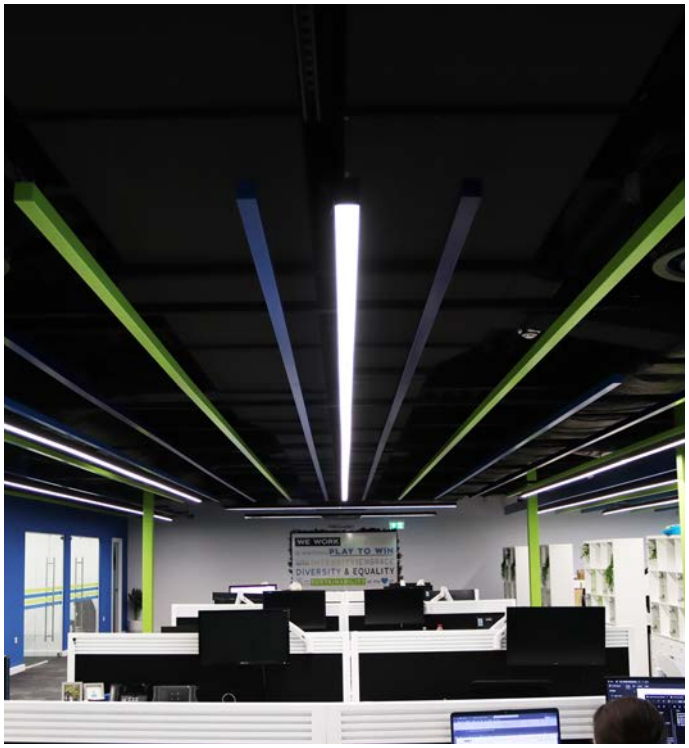
reducing carbon from within

A DECARB DEMONSTRATOR IN REAL CONDITIONS

This installation forms part of a wider internal programme to reduce operational carbon, eliminate fossil fuel dependency, and accelerate the transition to fully electric building services. The decision to deploy the HP modular AHUs at our HQ. was governed by the same principles applied across client estates: performance, reliability, and emissions reduction without disruption.

The project was delivered under conditions that are typical of public and private sector retrofit. Limited space, ageing plant, live occupancy, and the requirement for rapid deployment are common across education, healthcare, retail, and commercial property.

This installation shows that progress does not depend on scale. It is enabled by system selection, modular delivery, and a strategy built around achievable, replicable action.



NET ZERO

HVAC DECARBONISATION
Air Handling Solutions by Mansfield Pollard

MANSFIELD POLLARD
AIR MANAGEMENT EXPERTS

projected energy **SAVING**

231,450 kWh

£20,325 energy savings

per annum

R.O.I. return on investment

2.5 years

CARBON footprint reduction

61.9 tonnes CO_2e

per annum

calculated using the UK grid carbon factor of 0.233 Kg CO_2 per kWh.

44 cars equivalent CO_2e reduction of an average diesel car p/a

equivalent number of diesel cars removed from UK roads equivalent to the amount of CO_2e saved (based on an average car emitting 1.42 tonnes of CO_2e per year)

2814 trees equivalent CO_2e absorption p/a

estimated no. of trees that would need to be planted to sequester the same amount of CO_2 (based on 1 tree absorbing 22kg of CO_2 per year)

ENERGY SAVING report

Date: April 2025

Client: Mansfield Pollard

Project: Office Decarbonisation & Energy Saving

INSTALLATION TO IMPACT

PROJECTING CARBON & ENERGY RETURNS

Alongside its technical function, this project supports MP's internal use of the Carbon AHU ROI Calculator. This proprietary tool is used to model carbon savings, energy reductions, and financial return across modular AHU deployments.

By connecting technical specification to measurable outputs, the tool supports estates teams, consultants, and project leads in evaluating the operational value of electrified ventilation strategies. Every input is based on real system data and applied within the context of sector-specific conditions and retrofit constraints.

Outputs include projected reductions in operational carbon, seasonal performance comparisons, and cost avoidance forecasts based on energy tariffs and system usage profiles. The result is a working model that links product selection to performance outcomes.

It provides a transparent route to defendable, deliverable carbon reduction and forms part of MP's broader approach to measurable decarbonisation at estate level.

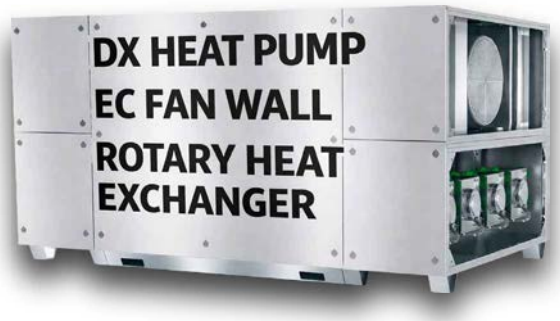
quantifying decarbonisation

real savings & measurable carbon outcomes

OLD LEGACY UNIT

VS

HP MODULAR AHU



The HP Series modular AHUs at Mansfield Pollard's Bradford headquarters now deliver the full heating and ventilation requirement of a 10,000ft² open-plan office using an all-electric system designed to match the performance typically associated with gas-fired infrastructure.

Performance modelling applies a like-for-like comparison with conventional gas-heated AHUs operating at 90 percent efficiency, reflecting the baseline condition common to many retrofit sites. All figures are based on 1,500 annual heating hours and derived from real operational data. Energy pricing, fan power, and carbon conversion factors reflect current values and standard industry assumptions.

HEATING EFFICIENCIES

Legacy

Heating duty required: **150kW**

Gas input (90% efficiency): **166.7kW**

Operating Cost: **£11.24/hr**

HP Modular

Rotary Heat Exchanger raises on-coil air to: **12.4°C**

Heating duty required: **60kW**

DX electrical input (COP 5): **12.4kW**

Operating Cost: **£2.76/hr**

Operational Data

Heating hours/yr: **1500**

Gas cost per kWh: **6.74p**

Electricity cost per kWh: **22.3p**

Calculations

Gas Used = 166.7 x 1500 = 250,050kW

Electricity Used = 12.4 x 1500 = 18,600kW

TOTAL GAS COST	£16,853

TOTAL ELEC COST	£4,138

HEATING ENERGY SAVING:	£12,715

FAN EFFICIENCIES

Legacy

Nominal motor: **7.5kW**

Belt Losses: **8-12%**

Pulley Losses: **3-5%**

Total absorbed load: **33.6kW**

HP Modular

AHU Fan Power:

Supply: 10x0.54 = **5.4kW**

Extract: 10x0.54 = **5.4kW**

Total EC fan power: **10.8kW**

Operational Data

x2 belt and pulley fans per legacy AHU

realistic load 7.5 x 1.12 = **8.4kW per fan**

electricity cost per kWh: **£0.2225**

Calculations

Energy saved per hour = 33.6 - 10.8 = 22.8kW

Cost saved per hour = 22.8 x £0.2225 = £5.07

FAN ENERGY SAVING / HR	22.8kW

FAN EFFICIENCY SAVING:	£7,610

TOTAL ANNUAL ENERGY SAVINGS:	£20,325

RETURN ON INVESTMENT (ROI):	2.5 yrs

based on capital outlay of x2 HP AHU's @c. 25k each

CARBON SAVING

61.9 tonnes CO_2e per annum

calculated using the UK grid carbon factor of 0.233 Kg CO_2 per kWh.

44 cars removed

equivalent number of diesel cars removed from UK roads equivalent to the amount of CO2e saved (based on an average car emitting 1.42 tonnes of CO2e per year)

2814 trees planted

estimated no. of trees that would need to be planted to sequester the same amount of CO2 (based on 1 tree absorbing 22kg of CO_2 per year)

NET ZERO

HVAC DECARBONISATION

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